

STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Geoff Klein **TDEC-DWS**

200 East Race St Knoxville, TN 37763 Lab ID: N00004860

Nashville Central Laboratory

Sampling Agency: TDEC: Division of Water Supply

Billing Code:

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

N00004860001

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: RAW

Project Site No.:

Station No.: Date/Time Collected:

08/03/2009 08:40

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced:

Date/Time Received:

TDEC-DWS TDEC-DWS

Priority Date:

08/03/2009

11:26

Received By:

L Barrociere

pH:

Conductivity: Temperature:

Chlorine, residual:

Field Determinations

Dissolved Oxygen:

Other: Flow:

CFS

TEST: Alkalinity, Total	METHOD: EPA 310.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	62	mg/L	3.8	10	M Chen	8/4/2009

TEST: Hardness, Calcium	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	48	mg/L	0.7	1	M Chen	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004860002

Project Name:

Sample Description: KINGSTON WTP

Sampler Project Name: FINISH

Project Site No.:

Station No.:

Date/Time Collected:

08/03/2009 08:45

Sampler's Name:

GEOFF KLEIN

County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced: **TDEC-DWS** TDEC-DWS

Priority Date:

Date/Time Received:

08/03/2009

11:26

Received By:

L Barrociere

Field Determinations pH:

Chlorine, residual: Conductivity: Temperature:

Dissolved Oxygen:

Other: Flow:

CFS

TEST: Alkalinity, Total	ME:					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	62	mg/L	3.8	10	M Chen	8/4/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	48	mg/L	0.7	1	M Chen	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004860003

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: RAW

Project Site No.:

Station No.:

Date/Time Collected:

08/03/2009 09:30

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix: ROANE - 73

EFO:

Water Knoxville

Sampling Agency:

TDEC-DWS

Billing Code: Send Report To: 327.39-12

Agency invoiced:

TDEC-DWS TDEC-DWS

Priority Date:

Date/Time Received:

08/03/2009 11:26

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature:

Dissolved Oxygen:

Other: Flow:

CFS

TEST: Alkalinity, Total METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	71	mg/L	3.8	10	M Chen	8/4/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	54	mg/L	0.7	1	M Chen	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004860004

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: FINISH

Project Site No.:

Station No.:

Date/Time Collected:

08/03/2009 09:35

Sampler's Name:

GEOFF KLEIN

County: Sample Matrix: **ROANE - 73**

Water

EFO:

Knoxville

Sampling Agency: **Billing Code:**

TDEC-DWS

Send Report To:

327.39-12

Agency Invoiced:

TDEC-DWS **TDEC-DWS**

Priority Date:

Date/Time Received:

08/03/2009 11:26

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual:

Conductivity: Temperature:

Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Alkalinity, Total	MET	THOD: EPA 31	٠			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	66	mg/L	3.8	10	M Chen	8/4/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	57	mg/L	0.7	1	M Chen	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit



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TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Geoff Klein

TDEC-DWS 200 East Race St Knoxville, TN 37763 Lab ID: N00004860 Nashville Central Laboratory

Sampling Agency: TDEC: Division of Water Supply

Billing Code:

327.39-12

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

N00004860001

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: RAW

Project Site No.: Station No.:

Date/Time Collected:

08/03/2009 08:40

Sampler's Name:

GEOFF KLEIN

County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced:

TDEC-DWS **TDEC-DWS**

Priority Date:

Date/Time Received:

08/03/2009 11:26

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Digestion Metals	METHOD: EPA 200,2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	08/04/2009				W Frye	8/4/2009

TEST: ICP-MS	ME ⁻	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	U	μg/L	0.93	5	M Pattanayek	8/4/2009
Barium	23	μg/L	2.5	5	M Pattanayek	8/4/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	8/4/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	8/4/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	8/4/2009
Cobalt	0.17J	μg/L	0.04	1	M Pattanayek	8/4/2009
Lead	0.40J	μg/L	0.10	1	M Pattanayek	8/4/2009
Manganese	26	μg/L	0.42	1	M Pattanayek	8/4/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	8/4/2009
Thallium	0.067J	μg/L	0.03	1	M Pattanayek	8/4/2009
Vanadium	Ü	μg/L	3.4	5	M Pattanayek	8/4/2009

TEST: Mercury	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Bass	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004860002

Project Name:

Sample Description:

KINGSTON WTP

Sampler Project Name: FINISH

Project Site No.:

Station No.:

Date/Time Collected:

08/03/2009 08:45

Sampler's Name: County:

GEOFF KLEIN

Sample Matrix:

ROANE - 73 Water

EFO: Sampling Agency: Knoxville

Billing Code:

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced:

TDEC-DWS TDEC-DWS

Priority Date:

Date/Time Received:

08/03/2009 11:26

Received By:

L Barrociere

Field Determinations

pH:

Chiorine, residual: Conductivity: Temperature: Dissolved Oxygen:

Other: Flow:

CFS

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	08/04/2009				W Frye	8/4/2009

TEST: ICP-MS	MET	THOD: EPA 20				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Arsenic	· U	μg/L	0.93	5	M Pattanayek	8/4/2009
Barium	20	μg/L	2.5	5	M Pattanayek	8/4/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	8/4/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	8/4/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	8/4/2009
Cobalt	0.082J	μg/L	0.04	1	M Pattanayek	8/4/2009
Lead	U	μg/L	0.10	1	M Pattanayek	8/4/2009
Manganese	U	μg/L	0.42	1	M Pattanayek	8/4/2009
Selenium	· U	μg/L	1.3	5	M Pattanayek	8/4/2009
Thallium	0.14J	μg/L	0.03	1	M Pattanayek	8/4/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	8/4/2009

TEST: Mercury	ME:	THOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Bass	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004860003

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: RAW

Project Site No.: Station No.:

Date/Time Collected:

08/03/2009 09:30

Sampler's Name: County:

GEOFF KLEIN

Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency: **Billing Code:**

TDEC-DWS 327.39-12

Send Report To: Agency Invoiced: TDEC-DWS TDEC-DWS

Priority Date:

Date/Time Received:

08/03/2009 11:26

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: **Dissolved Oxygen:**

Other: Flow:

CFS

TEST: Digestion Metals	ME	THOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	08/04/2009				W Frye	8/4/2009

TEST: ICP-MS	ME:	THOD: EPA 20	0.8	0.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Arsenic	U	μg/L	0.93	5	M Pattanayek	8/4/2009		
Barium	22	μg/L	2.5	5	M Pattanayek	8/4/2009		
Beryllium	U	μg/L	0.11	1	M Pattanayek	8/4/2009		
Cadmium	U	μg/L	0.41	1	M Pattanayek	8/4/2009		
Chromium	U	μg/L	2.0	5	M Pattanayek	8/4/2009		
Cobalt	0.13J	μg/L	0.04	1	M Pattanayek	8/4/2009		
Lead	0.24J	μg/L	0.10	1	M Pattanayek	8/4/2009		
Manganese	8.1	μg/L	0.42	1	M Pattanayek	8/4/2009		
Selenium	U	μg/L	1.3	5	M Pattanayek	8/4/2009		
Thallium	0.095J	μg/L	0.03	1	M Pattanayek	8/4/2009		
Vanadium	U	μg/L	3.4	5	M Pattanayek	8/4/2009		

TEST: Mercury	ME	THOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Bass	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

N00004860004

Project Name:

Sample Description:

ROCKWOOD WTP

Sampler Project Name: FINISH

Project Site No.: Station No.:

Date/Time Collected:

08/03/2009 09:35

Sampler's Name: County:

GEOFF KLEIN

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-DWS

Billing Code: Send Report To: 327.39-12 TDEC-DWS

Agency Invoiced:

TDEC-DWS

Priority Date:

Date/Time Received:

08/03/2009 11:26

Received By:

L Barrociere

Field Determinations

pH:

Chlorine, residual: Conductivity: Temperature: **Dissolved Oxygen:**

Other: Flow:

CFS

TEST: Digestion Metals	MET	HOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	08/04/2009				W Frye	8/4/2009

MET	THOD: EPA 200	0.8			
RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
U	μg/L	0.93	5	M Pattanayek	8/4/2009
24	μg/L	2.5	5	M Pattanayek	8/4/2009
U	μg/L	0.11	1	M Pattanayek	8/4/2009
U	μg/L	0.41	1	M Pattanayek	8/4/2009
U	μg/L	2.0	5	M Pattanayek	8/4/2009
0.091J	μg/L	0.04	1	M Pattanayek	8/4/2009
U	μg/L	0.10	1	M Pattanayek	8/4/2009
0.54J	μg/L	0.42	1	M Pattanayek	8/4/2009
U	μg/L	1.3	5	M Pattanayek	8/4/2009
0.053J	μg/L	0.03	1	M Pattanayek	8/4/2009
U	μg/L	3.4	5	M Pattanayek	8/4/2009
	RESULT U 24 U U U 0.091J U 0.54J U 0.053J	RESULT UNITS U μg/L 24 μg/L U μg/L U μg/L U μg/L 0.091J μg/L U μg/L 0.54J μg/L U μg/L 0.053J μg/L	U μg/L 0.93 24 μg/L 2.5 U μg/L 0.11 U μg/L 0.41 U μg/L 2.0 0.091J μg/L 0.04 U μg/L 0.10 0.54J μg/L 0.42 U μg/L 1.3 0.053J μg/L 0.03	RESULT UNITS MDL MQL U μg/L 0.93 5 24 μg/L 2.5 5 U μg/L 0.11 1 U μg/L 0.41 1 U μg/L 2.0 5 0.091J μg/L 0.04 1 U μg/L 0.10 1 0.54J μg/L 0.42 1 U μg/L 1.3 5 0.053J μg/L 0.03 1	RESULT UNITS MDL MQL ANALYZED BY: U μg/L 0.93 5 M Pattanayek 24 μg/L 2.5 5 M Pattanayek U μg/L 0.11 1 M Pattanayek U μg/L 0.41 1 M Pattanayek U μg/L 2.0 5 M Pattanayek 0.091J μg/L 0.04 1 M Pattanayek U μg/L 0.10 1 M Pattanayek 0.54J μg/L 0.42 1 M Pattanayek U μg/L 1.3 5 M Pattanayek 0.053J μg/L 0.03 1 M Pattanayek

TEST: Mercury	ME.	THOD: EPA 24	5.1			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	A Bass	8/4/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit